

Operations Management

MBA II Semester

Unit IV

Quality Management: An Introduction

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# What is Quality

- Quality is defined as “Degree of Excellence”
- Quality is fitness for use or purpose
  - Joseph M Juran
- Quality is conformance to requirement
  - Philip B Crosby
- The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs of customers.
- *“The ability of a product or service to consistently meet or exceed customer expectations”*

# Various Dimensions of Quality

- ✓ Performance
- ✓ Features
- ✓ Reliability
- ✓ Serviceability
- ✓ Durability
- ✓ Aesthetics
- ✓ Safety
- ✓ Conformance
- ✓ Perceived Quality
- ✓ Consistency

# Responsibility of Quality

- Top Management
- Design
- Procurement
- Production/operations
- Quality assurance
- Packaging and shipping
- Marketing and sales
- Customer service

# Benefits of Quality

- An enhanced reputation for the organization
- The ability to command premium prices
- An increased Market share
- Greater Customer Loyalty
- Lower Liability costs
- Fewer Production or Service problems
- Higher profits
- Fewer complaints from customers
- Lower Production Costs

# Poor Quality leads to

- Low customer satisfaction
- Low morale of workforce
- High process bottlenecks
- More rework
- High repair cost
- Wastage
- Low productivity
- Loss of business
- Increase in business liability

# Costs of Quality

- I. **Costs of Prevention of Defects / Prevention Costs:** Training and performing acceptance sampling of raw materials; Six Sigma and other techniques.
- II. **Cost of Detecting defects in the Final Products/ Appraisal Costs:** Outgoing inspection of products before they are shipped to the customers.
- III. **Internal Failure Costs:** Costs incurred to fix problems that are detected before the product/service is delivered to the customer.
- IV. **External Failure Costs:** All costs incurred to fix problems that are detected after the product/service is delivered to the customer.

# The Foundations of Modern Quality Management: The Quality Gurus

- Walter Shewhart
- W. Edward Demings
- Joseph M. Juran
- Philip B. Crosby
- Kaoru Ishikawa



# Walter Shewhart

- Founder of modern quality movement and an innovator in the application of statistics to quality. Also known as “**Father of Statistical Quality Control**”.
- He stressed the need for operational definition of Total Quality Management (TQM) and Continuous improvement.
- Dr. Shewhart believed that lack of information greatly hampered the efforts of control and management processes in a production environment. In order to aid a manager in making scientific, efficient, economical decisions, he developed Statistical Process Control methods.
- Many of the modern ideas regarding quality owe their inspirations to Dr. Shewhart.

# The Deming philosophy

- **William Edwards Deming** (October 14, 1900–December 20, 1993) was an American statistician, college professor (at New York University in 1940s), author and consultant.
- Deming is widely credited with improving production in the United States during World War II.
- He went to Japan after World War II to assist the Japanese in improving quality and productivity and he is best known for his work in Japan.

# Deming's 14 Principles to achieve Quality in Business

1. Create Constancy of purpose towards improvement in product & service
2. Adopt the the new philosophy: a strong commitment is required
3. Cease dependence on mass inspection
4. End the practice of awarding business on the basis of price tag alone.
5. Improve constantly and forever the every process of production and service, i.e. work continually on system improvement
6. Institute mordern methods of training on the job
7. Emphasis on adopting and instituting leadership among the managers.

# .....Deming's 14 Principles

8. Drive out fear so that everyone work effectively for the company.
9. Break Down Barriers Between Departments
10. Eliminate slogan and goals for the Workforce without providing the methods.
11. Eliminate work standards that prescribe arbitrary numerical quotas
12. Remove barriers between hourly workers and his right to pride of workmanship
13. Encourage education and retraining
14. Top management commitment and action that will push on the above 13 points.

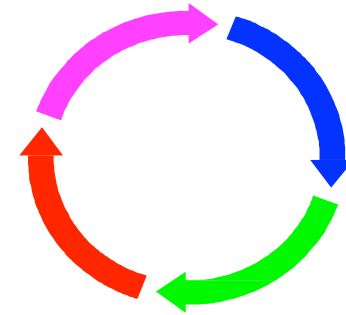
# The Deming Cycle/ PDCA/PDSA Cycle

## PLAN

Plan a change to the process. Predict the effect this change will have and plan how the effects will be measured

## DO

Implement the change on a small scale and measure the effects



## ACT

Adopt the change as a permanent modification to the process, or abandon it

## CHECK / STUDY

Study the results to learn what effect/impact the change had, if any

# The Juran philosophy

- **Joseph Moses Juran** (December 24, 1904 – February 28, 2008) was a 20th century management consultant who is principally remembered as an evangelist for quality and quality management, writing several influential books on these subjects.
- He mentioned Quality is Customer Satisfaction.
- Customers wants the Right Product Right.
- According to him there are huge hidden costs of quality.

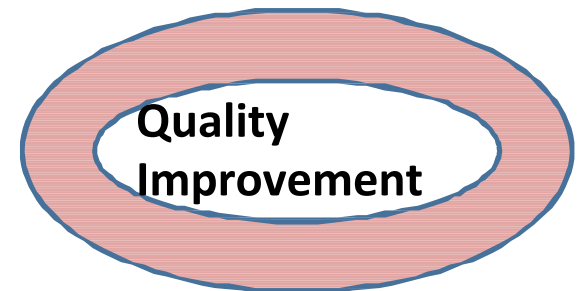
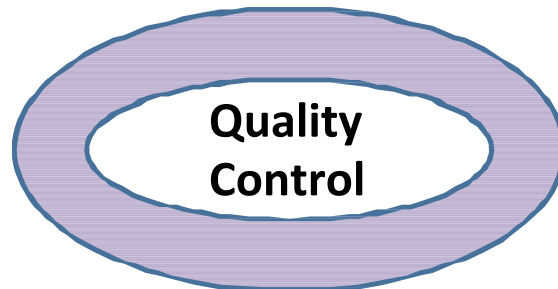
# Juran Quality Trilogy

1. *Quality planning*: Process of preparing to meet quality goals. Involves understanding customer needs and developing product features.
2. *Quality control*: Process of meeting quality goals during operations. Control parameters. Measuring the deviation and taking action.
3. *Quality improvement*: Process for breaking through to unprecedented levels of performance. Identify areas of improvement and get the right people to bring about the change.

# Juran's Quality Trilogy...

## Quality Planning

- Identify who are the customers
- Determine the needs of those customers
- Develop a product that can respond to those needs
- Optimize the product features so as to meet our needs and customer needs

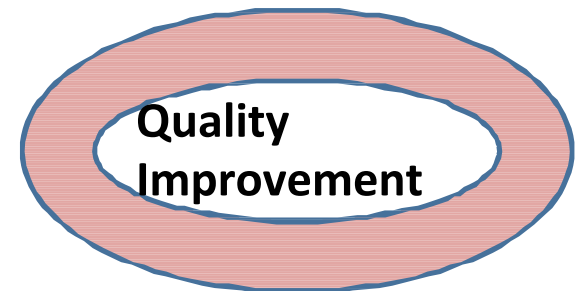
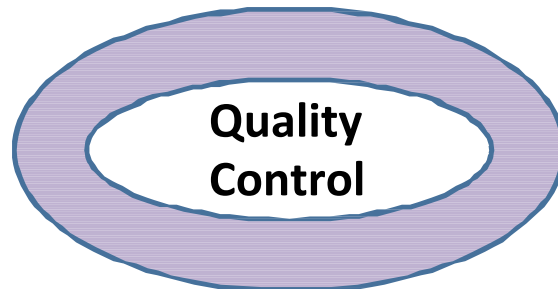




# Juran's Quality Trilogy...

## Quality Control

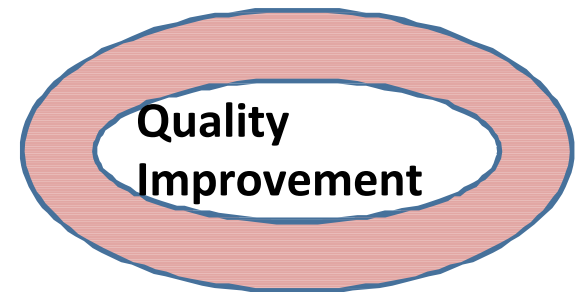
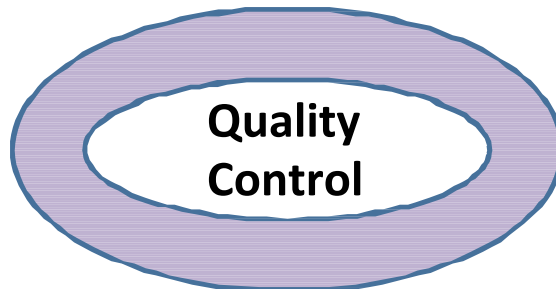
- Choose control subjects
- Choose units of measurement
- Establish measurement
- Establish standards of performance
- Measure actual performance
- Interpret the difference
- Take action on the difference



# ...Juran's Quality Trilogy

## Quality Improvement

- Identify the project
- Form a team
- Diagnose
- Rectify
- Manage change



# The Crosby philosophy

- **Philip Bayard "Phil" Crosby**, (June 18, 1926–August 18, 2001) was a businessman and author who contributed to management theory and quality management practices.
- Crosby initiated the Zero Defects program at the Martin Company Orlando, Florida plant.
- Popularized the phrase “Do it right the first time”.

# Crosby's Fourteen Steps for Quality Improvement

1. Management Commitment
2. Quality Improvement Team
3. Quality Measurement
4. Cost of Quality Evaluation
5. Quality Awareness
6. Corrective Action
7. Zero Defects Planning
8. Supervisor Training
9. Zero Defects Day
10. Goal Settings
11. Error Cause Removal
12. Recognition
13. Quality Council
14. Do It All Over Again

# Kaoru Ishikawa

- The late Japanese expert on quality was strongly influenced by both Deming and Juran.
- He is best known for his **Fishbone Diagram (Cause-and-effect diagram)** for problem solving and implementation of quality circles, which involve workers in quality improvement.
- The design of the diagram looks much like the skeleton of a fish. Therefore, it is often referred to as the fishbone diagram.

# Ishikawa' Fishbone Diagram (example)

